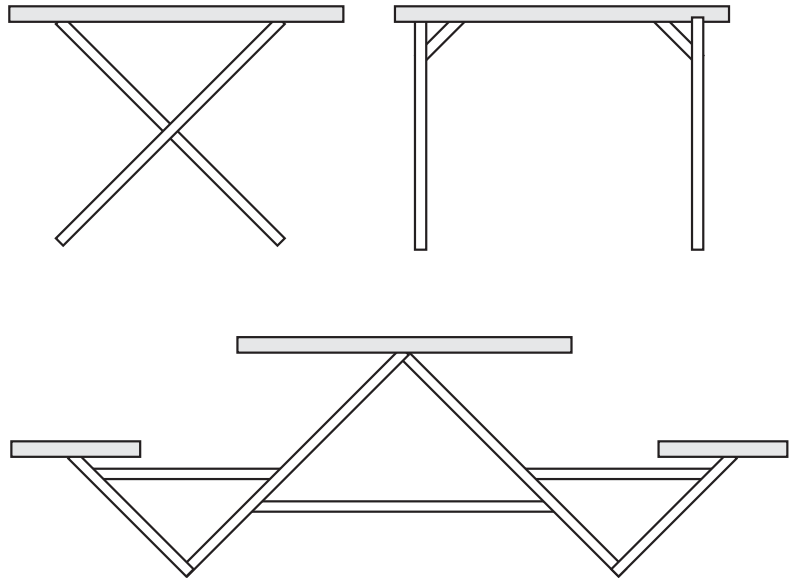
EXAMPLE DESIGN BRIEF: PORTABLE TABLE

Portable tables are useful in many places:



A portable table has to have two features not found in most tables - it needs to be light and it needs to fold.

You are going to design and make a portable table. You may have your own design proposal or you may use the one that follows.

Whichever you do, you will need to:

- Research and analyse the proposal.
- Produce a specification.
- Produce a design proposal.
- Propotype the design and test it.

DESIGN PROPOSAL AND RESEARCH

A charity has a need for portable tables. These will be used for selling produce from the third world at fairs and to display the work the charity does at exhibitions. The tables need to fold so they can be moved easily - for the same reason, they need to be light.

Write down the design proposal.

You should then think about the following questions - and any others you think are important. You will need to do some research to help you answer these questions.

Question	Research
a) How large should your table be?	a) Talk to the users of tables like the one you are designing to find what their needs are.
b) How can the table be made to fold up for transport?	b) Examine folding mechanisms on as many objects as you can (not only tables)
c) What material can you use to make it light?	c) A database of materials will help you find materials that are light and strong. Are there any other properties that you can think of?
d) How will you make sure that the table is strong enough for its purposes? (How large a weight do you think it should be able to hold?)	
e) How will you make sure that the table is stable enough?	
f) How will you make sure the table is stable enough for its intended use? How much force might be expected? How would it be most likely to topple your design? Consider how you might improve its stability. What is the greatest load that your table will carry without toppling? What is its greatest angle of tilt? What forces are required to destabilise it?	

This task involves interviewing your client about the nature of their problem and gives you the opportunity to design a structure to help them. Usually the structure is only part of a solution and you will need to clarify the whole situation.

For example, money may be less important than safety. If the structure collapses, it may lead to death. This probably wouldn't be the case for a hymn sheet holder for a vicar.

Here are some questions you should ask to clarify your problem:

- What is the structure to be used for? Open with this question, and then follow this up with other questions until you really understand what, when, how often, by who, why and where the structure is to be used.

- Are there particular requirements of scale (e.g. length, height etc.)? Draw a sketch.
  Is the structure to be fixed or portable? Should it be stable under its own weight?

- How strong must it be?
  What loads must be carried by the structure?
  What materials might be used?

- Are there any constraints? How heavy might the structure be?
  Are there cost limitations?

Identify possible designs, and look at a variety of ideas from books. Make some sketches, consider a selection of materials and check back with your client.

Then identify potential problems of stability, rigidity, strength and weight.

- Will the structure be strong enough ? What loads need to be supported where? Which parts of the structure might be weak and how could they be strengthened?

- Will this design be sufficiently rigid? What loads might bend it and how much deflection can be allowed in the structure?

- Will the design be stable in the situation for which it is designed? What might topple or destabilise it?

- Is the structure too heavy, or does it have too many members requiring expensive and time consuming manufacture?
  Could it be made simpler and lighter?